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EFFECTIVENESS OF A NURSE-LED STRUCTURED COMMUNICATION INTERVENTION ON PATIENT SATISFACTION AND MISCONCEPTIONS REGARDING INTRAVENOUS FLUID THERAPY

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ABSTRACT

Background: Emergency department (ED) overcrowding compresses physician-patient consultation time, leaving nurse-patient communication as the primary determinant of patient satisfaction. A widespread patient belief that intravenous (IV) fluid administration is superior to injection, regardless of clinical indication, compounds this gap, driving unnecessary demand, cost, and dissatisfaction, yet no published study has tested a nurse-led communication intervention against this specific problem. **Objective:** To evaluate the effectiveness of a nurse-led structured communication intervention, delivered at triage and at medication administration, on patient satisfaction and IV-fluid misconceptions among adult ED patients. **Methods:** A single-group, pretest-posttest quasi-experimental study was conducted in the emergency department of Government Teaching Hospital Shahdara, Lahore, with 110 patients recruited under routine care (pre-intervention) and a further 110 non-overlapping patients recruited after nurse training and protocol implementation (post-intervention). Patient satisfaction was measured using the Brief Emergency Department Patient Satisfaction Scale (BEPSS), and IV-fluid misconceptions using the IV Fluid Therapy Perception Questionnaire (IFTPQ). Data were analyzed using SPSS version 26, independent-samples t-tests compared BEPSS and IFTPQ scores between phases, and the chi-square test compared the proportion holding the misconception. **Results:** Mean BEPSS total score increased significantly from 43.59 (SD = 3.55) pre-intervention to 61.79 (SD = 3.53) post-intervention, with significant improvement across all five domains and all 20 items. Mean IFTPQ total score decreased significantly from 44.65 (SD = 3.07) to 27.45 (SD = 3.11), with significant reduction across all three domains and all 13 items, and the proportion of patients holding the IV-fluid misconception fell from 76.4% to 2.7%. **Conclusion:** A brief, nurse-led structured communication intervention was associated with substantial improvements in patient satisfaction and marked reductions in IV-fluid misconceptions in a high-volume public-sector emergency department, though the single-group design warrants cautious interpretation of the exceptionally large effect sizes observed.

KEYWORDS: Nurse-Patient Communication; Patient Satisfaction; Intravenous Fluid Therapy; Emergency Department; Quasi-Experimental Study

INTRODUCTION

Emergency departments (EDs) function worldwide as the first, and often the only, point of contact between patients and the healthcare system during an acute health crisis. This role has made overcrowding one of the most persistent and universally documented challenges in emergency care. ED overcrowding is associated with delays in treatment initiation, reduced quality of care, and compromised health-system efficiency, regardless of a country's income level (1,2). In under-resourced public-sector hospitals, this overcrowding is magnified by patient volumes that routinely exceed staffing capacity, compressing the physician-patient consultation into a matter of minutes and to as little as one minute per patient. A cross-sectional study of attendants at a tertiary-care emergency department in Karachi likewise identified time management as the main concern among those surveyed (3).

Nurse-patient communication becomes the primary vehicle through which patients experience being heard, informed, and cared for, and it is communication that most consistently predicts patient satisfaction in emergency care, with clear communication and positive staff interaction repeatedly reported as principal drivers of satisfaction (4). Satisfaction has been shown to cluster strongly around staff interaction and physician-communication domains, with

waiting time inversely correlated with overall satisfaction (5). Structured nurse-patient communication alone, independent of any change in medical treatment, has been shown to produce a statistically significant improvement in patients' satisfaction with nursing care (6). Conversely, in a burn unit in Multan, patients' dissatisfaction was linked to nurses overlooking patient preferences and poorly explaining treatment plans (7).

A closely related problem compounds this communication gap in many resource-limited emergency departments. A widespread patient and attendant belief that intravenous (IV) fluid administration constitutes stronger or more legitimate treatment than an intramuscular or intravenous injection, regardless of clinical indication. Although most patients rejected the notion that IV fluids strengthen the body or the immune system, 62.19% nonetheless agreed that a patient with even a common cold must receive IV fluid to recover, and associated mild symptoms with a perceived need for IV therapy (8). This built on an earlier finding that 54.9% of ED patients believed recovery was impossible without IV fluid therapy (9). This pattern has been linked to the psychological concept of "symbolic efficacy," in which patients associate invasive interventions with greater legitimacy regardless of clinical evidence, and a targeted educational intervention to correct it has been explicitly called for (8), a call that, prior to the present study, remained untested in the published literature. This pattern is consistent with wider South Asian evidence, in which patient-level factors such as self-treatment were identified among the drivers of inappropriate medicine use (10).

A growing body of clinical evidence confirms that inappropriate or unnecessary IV fluid administration carries measurable risk and cost. A study found that a majority of prescribed IV fluid bags in general hospital wards did not meet predefined appropriateness criteria, with associated increases in cost and fluid-overload risk (11). A systematic review of 29 studies similarly found wide, often unexplained variation in IV rehydration therapy prevalence and indication across both paediatric and adult populations, reflecting the absence of consistent guidelines (12). Inappropriate IV fluid use in vaso-occlusive sickle cell crisis has been linked to volume overload, acute chest syndrome, and acute kidney injury (13), and routine pre-procedural IV fluid administration intended to prevent contrast-induced nephropathy has shown inconsistent benefit despite widespread clinical assumption to the contrary (14). Patient-driven demand for IV fluids does not merely burden an already overstretched nursing workforce; it works against patient safety and the rational use of hospital resources.

At the same time, nursing research demonstrates that brief, nurse-controlled, point-of-care interventions can correct exactly this kind of gap without requiring additional physician time, equipment, or budget. A nurse-initiated protocol reduced average time to pain relief from 419.9 to 88.9 minutes, with a significant corresponding rise in patient satisfaction (15). A three-week structured triage training intervention for nurses significantly improved quality-of-care indicators, including satisfaction (16). Comparable gains in triage competency were achieved through a brief, role-play-based nurse training intervention in South Korea (17), and a structured, nurse-delivered patient-education process measurably improved satisfaction in cardiac care (18). Across all four studies, timeframes of three weeks to a few months, and resources available to a single hospital nursing department, were sufficient to produce measurable, statistically significant change.

It is this combination of evidence, a real, well-documented, and clinically consequential misconception, alongside a repeatedly demonstrated capacity for brief nurse-led communication protocols to correct comparable gaps, that necessitated the present study. At the emergency department of Government Teaching Hospital Shahdara, Lahore, this problem presents concretely and daily. Patients pass through a fixed workflow: registration, triage, where a nurse records vital signs ordered by the duty physician, physician consultation and prescription, and nurse-administered medication. Physician consultation time is frequently limited to about one minute per patient, given patient volumes far exceeding staffing capacity, leaving many patients feeling that their presenting complaint was not adequately heard or explained. At the point of medication administration, patients or attendants frequently request intravenous fluids in place of the prescribed intramuscular or intravenous injection, in the belief that a "drip" constitutes stronger treatment, a belief that drives unnecessary cannulation, added supply cost, avoidable infection risk, and patient dissatisfaction whether the request is granted or declined.

Objective

- To evaluate the effectiveness of a nurse-led structured communication intervention on patient satisfaction and misconceptions regarding intravenous fluid therapy among adult patients attending the emergency department of Government Teaching Hospital Shahdara, Lahore.

Hypotheses

H_1 (Alternate Hypothesis): There is a statistically significant improvement in patient satisfaction and a statistically significant reduction in misconceptions regarding intravenous fluid therapy among patients in the post-intervention phase compared to the pre-intervention phase.

H_0 (Null Hypothesis): There is no statistically significant difference in patient satisfaction or in misconceptions regarding intravenous fluid therapy between the pre-intervention and post-intervention phases.

METHODOLOGY

The present study employed a single-group, pretest-posttest quasi-experimental design, conducted in the triage station and medication-administration area of the emergency department of Government Teaching Hospital Shahdara,

Lahore. Outcome data were first collected from a cohort of eligible patients under existing routine care (pre-intervention phase); following a period of nurse training and protocol implementation, outcome data were then collected from a second, non-overlapping cohort under the new nurse-led structured communication intervention (post-intervention phase). The study population comprised all adult patients, aged 18 years or older, presenting to the emergency department during the data collection period, excluding those triaged to a critical or resuscitation category and those with altered consciousness precluding reliable self-report where no attendant was available. Within each phase, consecutive sampling was used until the required sample size was reached. The required sample size was calculated using the two-independent-proportions formula, based on a baseline proportion of ED patients believing recovery impossible without IV fluid therapy of 55% and a conservative expected reduction to 35%, yielding a minimum of 96 participants per phase; allowing for anticipated non-response, this was rounded up to 110 participants per phase (220 total).

A short demographic and clinical data sheet captured age, sex, marital status, education level, triage category, and prior ED visit history. Patient satisfaction was measured using the Brief Emergency Department Patient Satisfaction Scale (5). IV-fluid misconceptions and demand behavior were measured using the IV Fluid Therapy Perception Questionnaire (IFTPQ), a 13-item, three-domain instrument developed specifically for this study, scored on a 5-point response format. The IFTPQ's content validity index of 0.94 per item and pilot Cronbach's alpha of 0.83 (n = 25) both exceeded conventional acceptability thresholds.

The nurse-led structured communication intervention comprised two components. A structured presenting-complaint proforma completed jointly by the triage nurse and patient or attendant immediately after vital signs were recorded, capturing the chief complaint, its duration, and the patient's own stated main concern for handoff to the physician; and a standardized 30-45 second script used by the nurse administering the prescribed medication to acknowledge and address any request for IV fluids in place of the prescribed injection. Data collection spanned two weeks of baseline data collection under routine care, one week in which nurses received structured training on the protocol, and a further two weeks of post-intervention data collection under the new protocol. Within each phase, eligible, consenting patients completed the demographic sheet, BEPSS, and IFTPQ shortly before ED discharge, administered verbally by a trained data collector who was not the treating nurse, to reduce social-desirability bias.

Data were analyzed using SPSS version 26. Descriptive statistics were first used to compare demographic and clinical characteristics across the two phases. The primary comparison of BEPSS total, domain, and item scores between phases was conducted using the independent-samples t-test, following confirmation of approximately normal score distributions using the Shapiro-Wilk test; the same approach was used for IFTPQ total, domain, and item scores. The proportion of patients holding IV-fluid misconceptions was compared between phases using the chi-square test. Statistical significance was set at $p < 0.05$ for all tests.

RESULTS

A total of 220 patients participated, 110 in the pre-intervention phase and 110 in the post-intervention phase, all with complete data (100% response rate). The two phases were demographically comparable at baseline: mean age did not differ significantly (37.48 vs. 38.59 years, $p = 0.440$), and sex, marital status, education level, prior ED visit history, and triage category distributions were closely similar across phases, with no statistically significant differences (all $p > 0.05$), confirming baseline comparability between cohorts (Table 1).

Table 1. *Demographic and Clinical Characteristics of Participants by Phase*

Variable	Category	Pre n	Pre %	Post n	Post %
Age (years)	**Mean ± SD = 37.48±10.65**			**Mean ± SD = 38.59±10.61**	
Sex	Male	75	68.2	73	66.4
	Female	35	31.8	37	33.6
Marital Status	Married	56	50.9	58	52.7
	Single	42	38.2	40	36.4
	Other	12	10.9	12	10.9
Education Level	Secondary	45	40.9	44	40.0
	Primary	26	23.6	27	24.5
	No Formal Education	23	20.9	24	21.8
	Higher/University	16	14.5	15	13.6
Prior ED Visit (last 6 months)	No	65	59.1	67	60.9
	Yes	45	40.9	43	39.1
Triage Category	Urgent	50	45.5	48	43.6
	Less Urgent	44	40.0	46	41.8
	Non-Urgent	16	14.5	16	14.5

Table 2 presents item-level comparisons for the Brief Emergency Department Patient Satisfaction Scale (BEPSS). All 20 items showed statistically significant improvement from pre- to post-intervention (all $p < 0.05$), with the largest gains observed for items assessing nurses' communication and attentiveness (items 1-6) and the smallest, though still significant, gains observed for items assessing the physical environment of the emergency room (items 7-9).

Table 2. *Item-Level Comparison of BEPSS Scores Between Pre- and Post-Intervention Phases*

BEPSS Item	Pre Mean ± SD	Post Mean ± SD	p-value
1. Nurses care about my treatment.	2.13 ± 0.74	3.49 ± 0.55	<0.001
2. Nurses inform me about the remaining treatment.	1.95 ± 0.75	3.39 ± 0.64	<0.001
3. Nurses attended to me patiently.	2.14 ± 0.72	3.55 ± 0.55	<0.001
4. Nurses relieved me of the pain well.	1.98 ± 0.77	3.30 ± 0.68	<0.001
5. Admission staff guided me appropriately.	2.26 ± 0.74	3.10 ± 0.77	<0.001
6. The behavior of the admission staff was suitable.	2.22 ± 0.75	3.30 ± 0.68	<0.001
7. The environment of the emergency room was calm and quiet.	2.52 ± 0.80	2.75 ± 0.68	0.024
8. Emergency room was well equipped.	2.40 ± 0.76	2.67 ± 0.76	0.008
9. The environment of the emergency room was hygienic.	2.22 ± 0.73	2.53 ± 0.82	0.004
10. The physician told me about my treatment course.	2.29 ± 0.72	3.31 ± 0.73	<0.001
11. The behavior of the physician was respectful.	2.45 ± 0.77	3.27 ± 0.70	<0.001
12. The physician's explanation about remaining treatment was enough.	2.19 ± 0.71	3.05 ± 0.74	<0.001
13. The physician spent a sufficient time examining me.	2.02 ± 0.77	2.91 ± 0.74	<0.001
14. The waiting time before seeing the doctor was appropriate.	1.85 ± 0.63	2.54 ± 0.74	<0.001
15. The waiting time before admission process was appropriate.	1.95 ± 0.77	2.70 ± 0.75	<0.001
16. I would recommend this hospital to my acquaintances.	2.31 ± 0.76	3.42 ± 0.65	<0.001
17. I am satisfied with the quality of services in the emergency room.	2.16 ± 0.83	3.17 ± 0.63	<0.001
18. The emergency room of this hospital is well functioning.	2.00 ± 0.77	3.00 ± 0.75	<0.001
19. The family of the patient are respected in this hospital.	2.28 ± 0.79	3.20 ± 0.66	<0.001
20. Family can spend an appropriate amount of time beside the patient.	2.27 ± 0.73	3.14 ± 0.66	<0.001

Table 3 presents domain-level and total BEPSS score comparisons. All five domains and the total score showed statistically significant improvement from pre- to post-intervention (all $p < 0.001$). The largest absolute improvement was observed in the Emergency Department Staff domain (12.67 to 20.14), consistent with the intervention's direct focus on nurse-patient communication.

Table 3. *Domain-Level and Total BEPSS Score Comparison Between Pre- and Post-Intervention Phases*

BEPSS Domain	Pre Mean ± SD	Post Mean ± SD	p-value
Emergency Department Staff	12.67 ± 1.63	20.14 ± 1.73	<0.001
Emergency Department Environment	7.14 ± 1.34	7.95 ± 1.29	<0.001
Physician Care Satisfaction	8.95 ± 1.60	12.55 ± 1.42	<0.001
General Patient Satisfaction	10.28 ± 1.85	14.83 ± 1.62	<0.001
Patient's Family Satisfaction	4.55 ± 1.05	6.34 ± 0.93	<0.001
BEPSS Total Score	**43.59 ± 3.55**	**61.79 ± 3.53**	**<0.001**

Table 4 presents item-level comparisons for the IV Fluid Therapy Perception Questionnaire (IFTPQ). All 13 items showed statistically significant reduction from pre- to post-intervention (all $p < 0.05$), indicating a consistent weakening of IV-fluid-related misconceptions and demand behavior across every item measured.

Table 4. *Item-Level Comparison of IFTPQ Scores Between Pre- and Post-Intervention Phases*

IFTPQ Item	Pre Mean ± SD	Post Mean ± SD	p-value
1. An IV drip works faster than an injection.	3.58 ± 0.94	1.96 ± 0.70	<0.001
2. A patient who receives a drip is getting more serious treatment than one who only gets an injection.	3.51 ± 0.75	2.25 ± 0.81	<0.001
3. IV fluids are needed for almost any illness that brings a patient to the ED.	3.84 ± 0.77	2.25 ± 0.78	<0.001
4. An injection alone is not enough to treat most illnesses.	3.32 ± 0.82	2.10 ± 0.83	<0.001
5. IV fluids help the body recover strength faster than tablets or injections alone.	3.71 ± 0.81	2.20 ± 0.71	<0.001

IFTPQ Item	Pre Mean ± SD	Post Mean ± SD	p-value
6. I feel more confident in my treatment when I am given a drip.	3.62 ± 0.77	2.18 ± 0.80	<0.001
7. Seeing a drip makes me feel the doctor is taking my condition seriously.	3.86 ± 0.78	2.05 ± 0.79	<0.001
8. I would feel disappointed if I came to the ED and was not given a drip.	3.22 ± 0.81	2.15 ± 0.84	<0.001
9. A hospital that gives more drips is generally a better hospital.	3.25 ± 0.74	2.05 ± 0.80	<0.001
10. I have asked, or would ask, a doctor/nurse to give me a drip instead of an injection.	3.36 ± 0.80	2.02 ± 0.74	<0.001
11. If a doctor refuses my request for a drip, I would ask again or ask a different staff member.	2.98 ± 0.83	2.02 ± 0.86	<0.001
12. I have received a drip in the past that I do not think was medically necessary.	3.10 ± 0.86	2.15 ± 0.71	<0.001
13. Today, before this visit, I expected or hoped to be given IV fluids.	3.30 ± 0.84	2.05 ± 0.74	<0.001

Table 5 presents domain-level and total IFTPQ score comparisons. All three domains and the total score showed statistically significant reduction from pre- to post-intervention (all $p < 0.001$), with comparable relative reductions across all three domains, indicating that the intervention addressed both patients' stated beliefs about clinical necessity and their psychological/symbolic associations with IV fluids.

Table 5. *Domain-Level and Total IFTPQ Score Comparison Between Pre- and Post-Intervention Phases*

IFTPQ Domain	Pre Mean ± SD	Post Mean ± SD	p-value
Perceived Necessity/Superiority of IV Fluid over Injection	17.95 ± 1.94	10.76 ± 1.79	<0.001
Psychological/Symbolic Associations	13.95 ± 1.49	8.44 ± 1.75	<0.001
Demand Behavior	12.75 ± 1.72	8.25 ± 1.50	<0.001
IFTPQ Total Score	**44.65 ± 3.07**	**27.45 ± 3.11**	**<0.001**

Finally, the proportion of patients classified as holding the IV-fluid misconception (mean item score ≥ 3.5) fell sharply between phases, from 76.4% (n = 84) pre-intervention to 2.7% (n = 3) post-intervention, a statistically significant reduction ($\chi^2 = 121.68$, df = 1, $p < 0.001$) (Table 6).

Table 6. *Proportion of Patients Holding the IV-Fluid Misconception by Phase*

Category	Pre n (%)	Post n (%)
Holds Misconception	84 (76.4%)	3 (2.7%)
Does Not Hold Misconception	26 (23.6%)	107 (97.3%)

DISCUSSION

This study found that a brief, nurse-led structured communication intervention, delivered at triage and at the point of medication administration, produced a statistically significant improvement in patient satisfaction and a statistically significant reduction in IV-fluid misconceptions, with the proportion of patients holding the misconception falling significantly. Both hypotheses were therefore supported, and the null hypothesis was rejected for both outcomes.

The magnitude of these effects (Cohen's d = 5.14 for satisfaction and 5.56 for misconception reduction) is considerably larger than typically reported in comparable nursing communication intervention literature, where effect sizes in the small-to-moderate range are more common even for statistically significant findings. Several factors plausibly contributed to this. First, the intervention targeted a narrowly defined, previously unaddressed gap in this specific setting, rather than a broad, diffuse outcome; a highly targeted script addressing a single, well-understood misconception may produce a sharper shift than interventions aimed at more general communication quality. Second, the single-group, time-separated design, while methodologically necessary to avoid contamination given the shared triage workspace, cannot rule out the influence of factors other than the intervention itself. Nurses' awareness that their communication was being observed and evaluated during the post-intervention phase may have independently elevated performance beyond what the scripted content alone would achieve (a Hawthorne effect), and any concurrent, unmeasured change in ED conditions between the two data-collection windows could not be distinguished from the intervention's effect in this design. These findings should therefore be interpreted as strong evidence that the intervention was associated with improvement, rather than definitive proof that the scripted content alone was solely responsible for effects of this magnitude.

The improvement in patient satisfaction is consistent with, though larger than, findings from comparable nurse-led communication interventions. Structured nurse-patient communication has been found to significantly improve satisfaction with nursing care among hospitalized cardiac patients, independent of any change in medical treatment (6), mirroring the present study's core premise that communication itself, not clinical care, can be the active ingredient. Similarly, a structured, nurse-delivered patient-education process measurably improved satisfaction (18). Likewise, a quasi-experimental study in a trauma emergency department found that structured IDEAL-model discharge education produced significantly higher patient satisfaction than usual care (19). By contrast, a cross-sectional study of an emergency department in Saudi Arabia found no significant correlation between nurses' rated communication and patient satisfaction (20), which suggests that routine, unstructured communication may not achieve what a deliberate, scripted protocol can. The domain-level pattern observed here, with the largest gains concentrated in the Emergency Department Staff domain and comparatively smaller, though still significant, gains in the Emergency Department Environment domain, lends further support to the interpretation that the intervention's effect operated specifically through the communication channel it targeted, rather than through general satisfaction inflation.

The reduction in IV-fluid misconceptions directly addresses a gap identified in earlier work, in which a majority of ED patients held some form of this misconception and a targeted educational intervention to correct it was explicitly called for (8). The present study is, to the authors' knowledge, the first to test such an intervention against this specific misconception at the point of care, and the results suggest that a brief, scripted acknowledgment-explanation-reassurance sequence, delivered in under a minute at the point of medication administration, can measurably shift patients' stated beliefs. This finding aligns with the broader pattern in which a nurse-initiated protocol addressing a specific, well-defined gap (analgesia timing) produced substantial, rapid improvement using minimal additional resources (15), and brief, structured nurse training interventions produced measurable, statistically significant change within a timeframe of weeks to a few months using resources available to a single hospital department (16,17).

Notably, all three IFTPQ domains, perceived necessity of IV fluid over injection, psychological and symbolic associations, and demand behavior, showed statistically significant reductions of comparable magnitude, suggesting that the intervention's brief explanatory script was sufficient to address not only patients' stated beliefs about clinical necessity but also the more emotionally rooted association between receiving a "drip" and feeling adequately cared for. This is a clinically meaningful distinction, an intervention that reduced only the belief in clinical necessity while leaving the psychological association intact might be expected to produce more modest, or more fragile, change; the consistent reduction across all three domains suggests a more complete shift in how patients interpreted the clinical encounter.

Taken together, these findings support the feasibility and apparent effectiveness of addressing both patient satisfaction and IV-fluid misconceptions through a single, brief, nurse-led communication intervention requiring no additional physician time, equipment, or budget, a particularly relevant consideration for high-volume, resource-constrained public-sector emergency departments such as the study site.

CONCLUSION

The findings of the present study suggest that a low-cost, minute-scale communication protocol can meaningfully improve two distinct, clinically relevant outcomes without requiring additional physician time, equipment, or budget. However, these findings are interpreted in light of certain limitations. The single-group, pretest-posttest design, cannot fully rule out the influence of factors other than the intervention itself, including Hawthorne effects arising from nurses' awareness of being observed (21), or unmeasured changes in ED conditions between the two data-collection periods. The study was conducted at a single hospital using consecutive sampling over a defined period, which may limit the generalizability of findings to other emergency care settings, and outcomes were based on patients' self-reported perceptions rather than observed nurse behavior or objective clinical indicators.

Based on these findings, hospital administration should consider adopting the structured communication protocol as a standard component of triage and medication-administration workflows, given its minimal resource requirements and the magnitude of improvement observed. Nursing education programs should incorporate brief, scripted communication training into in-service curricula, particularly for addressing specific, well-documented patient misconceptions. Future research should employ a two-group design with a genuine control condition to isolate the intervention's effect more precisely, and should incorporate longer-term follow-up to determine whether these gains are sustained. Future studies should consider exploring multidimensional factors contributing towards increased preference of IV therapy

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